FULL EXPOSURE OF THE AXILLARY AND SUPRASCAPULAR NERVES

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We describe a method of exposing the whole length of the axillary and suprascapular nerves through a sabre-cut incision. The coracoid process is osteotomised and part of trapezius is detached from its insertions. The posterior deltoid is freed from its scapular origin to expose infraspinatus.

We have used this approach to explore combined injuries of the axillary and suprascapular nerves with good results, and no serious complications. Its success depends on a meticulous surgical technique.

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Full surgical access to the suprascapular and axillary nerves is difficult. The suprascapular nerve has been approached through a ventral zig-zag incision,¹ posteriorly parallel to the spine of the scapula,² and from above by detaching part of the trapezius,³ but all of these have limitations.

We use a sabre-cut incision across the shoulder, detaching part of the trapezius and the posterior deltoid from the scapula and clavicle. This allows good exposure of both suprascapular and axillary nerves.

TECHNIQUE OF OPERATION

The patient is placed in a lateral position and draped to allow free movement of the affected arm. The incision starts anteriorly near the axillary fold and continues along the deltopectoral groove over the clavicle to the quad-

rilateral space posteriorly (Fig. 1).

The axillary nerve. The patient is tilted slightly towards the semisupine position. The anterior half of the incision is used to open the deltopectoral groove. Part of the pectoralis major tendon may be released from the humerus if necessary to enlarge the operative field. The tendinous insertion of pectoralis minor is released from the coracoid process, and coracobrachialis and the short head of the biceps are retracted distally after osteotomy of the tip of the coracoid. Before the osteotomy a small cancellous bone screw is partly inserted to make subsequent osteosynthesis easier (Fig. 2).

The posterior cord of the plexus and its terminal branches are exposed and the axillary nerve is followed into the quadrilateral space. Exploration of the terminal branches of the axillary nerve beyond the quadrilateral space, if required, is postponed to the end of the next stage of the operation (Fig. 3).

The suprascapular nerve. The patient is tilted slightly towards the semiprone position. The posterior half of the

Fig. 1

The skin incision.

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Fig. 2

The anterior approach to the axillary nerve, shown in black (Ax, axillary nerve; P, posterior cord; L, lateral cord; M, medial cord; Clav, clavicle; Biceps, biceps short head; Corac, Coracobrachialis; P Minor, pectoralis minor; P Major, pectoralis major).

incision is completed. Skin flaps are raised deep into the subcutaneous fatty tissue laterally to the acromion and medially to the medial margin of the posterior deltoid. These are sutured back, and the posterior origin of the deltoid is detached from the scapular spine and retracted laterally. The infraspinatus is then retracted downwards to identify the motor branch from the suprascapular nerve. All of the trapezius insertion is detached from the scapular spine, acromion and clavicle, and reflected medially to expose the suprascapular nerve. The suprascapular nerve can then be followed from the upper trunk of the brachial plexus and down between the omohyoid muscle and the clavicle to the scapular notch. Elevation of the suprascapular muscle allows exploration of the suprascapular nerve to the spinoglenoid notch.

At the posterior end of this exposure the terminal branches of the axillary nerve are explored as they appear at the quadrilateral space (Fig. 3).

Wound closure and immobilisation. The tip of the coracoid process is replaced and fixed with a screw. The trapezius and deltoid are reattached to the scapula and clavicle using non-absorbable sutures placed through drill holes in the bones.

The wound is closed in layers, and the arm is bandaged against the chest with the elbow flexed for three weeks. A sling is used for another two to three weeks, and after this active and passive exercises of the shoulder are begun.

DISCUSSION

The axillary nerve can be exposed either anteriorly or posteriorly,³ but access to the full length of the suprascapular nerve is difficult because of its deep position. The usual anterior approach cannot expose the distal part beyond the scapular notch, while the superior or posterior approach alone can expose only a limited part of the nerve. Our approach allows thorough exploration of both suprascapular and axillary nerves.

This approach was developed for the treatment of com-

Fig. 3

The dorsal approach to the suprascapular nerve and the axillary nerve emerging at the quadrilateral space. Both are shown in black (IS, infraspinatus; SS, supraspinatus; PL, brachial plexus; Ax, axillary nerve; Clav, clavicle).

bined injuries of these nerves⁴ and our results are reported on p. 527 of this issue. Our experience has shown that after such injuries recovery of the infraspinatus muscle is essential for active shoulder elevation.⁵ The suprascapular nerve may be damaged at several levels in traction injuries, making it important to explore its full length. The surgical approach which we describe is sufficient for this purpose.

Secure reattachment of both the trapezius and deltoid is essential, and the shoulder girdle must be immobilised by bandaging. We have experienced no severe complications after this procedure.

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